REMARKS

Reconsideration of the rejections set forth in the Office action dated 11/29/2004 is respectfully requested in view of the following remarks.

The Specification

The application number has been provided for the related copending application cited in the first paragraph of the specification.

The Claims

Claims 1 – 33 are pending in this application, including independent claims 1, 32 and 33. In this amendment, independent claims 1, 32 and 33 and dependent claim 13 have been amended to correct informalities. Claim 1 was amended to include missing punctuation; claim 32 was amended to include a missing word; claim 33 was amended to correct the term "span number" to be "span value" as indicated in part a) of that claim; and claim 13 was amended to delete a repeated word. No substantive amendments have been made to the claims, since it is believed that the Office Action does not state a prima facie case of obviousness with respect to Claims 1, 32 and 33. These claim amendments are not essential for patentability, are not narrowing amendments and are merely technical and do not and are not intended to effect the Doctrine of Equivalents as it might be applied to the claims were they unamended.

Objection to the Drawings

The Office Action Summary page indicates that the drawings filed on 10 September 2001 are objected to. The undersigned wishes to bring to the Examiner's attention that a set of 31 replacement (formal) sheets of drawings were filed on 11 December 2001 in this application in response to a Notice to File Corrected Application

Papers. Records in Public PAIR indicate that the replacement drawings filed on 11 December 2001 are included in the application file.

With respect to drawing objections, no specific problems with the drawings are described in the Detailed Action. If there are objections to the drawings, the undersigned requests that the Examiner specify the problems in the next communication so that appropriate correction may be made.

Drawing Corrections

Several corrections have been made to Figures 2, 13, 14 and 19 in the drawings in order to conform those figures to the specification, as described above. Replacement Sheets for Figures 2, 13, 14 and 19 are attached to this Reply.

Information Disclosure Statement

The undersigned acknowledges receipt of a copy of the Information Disclosure Statement (IDS) received on August 5, 2002.

Applicants also mailed an IDS on the filing date of the application, September 10, 2001, citing one US Patent and three pending patent applications. The undersigned notes that a copy of the IDS Form with the cited references has not yet been returned with the Examiner's initials showing that the Examiner has considered and made of record the cited references. It is respectfully requested that consideration of these documents be acknowledged in the next Office Action.

35 U.S.C. 103(a)

In the Office Action, claims 1 – 33 were rejected, in paragraph 4, under 35 U.S.C. § 103(a) as being unpatentable over Liechti, "The SGF Metadata Framework," hereafter Liechti, in view of U.S. Patent 6,496,842 issued to Lyness (hereafter Lyness). This rejection is respectfully traversed, and reconsideration of this rejection is respectfully requested in view of the following remarks. It is fundamental to a prima facie case of

obviousness that the prior art reference (or references when combined) must teach or suggest all the claim limitations. While the claim terms may be given their broadest reasonable interpretation, that interpretation cannot include reading specific limitations out of the claims. In brief, it is respectfully submitted that a prima facie case of obviousness has not been made with respect to the rejections of claims 1, 32 and 33 because neither the Liechti nor Lyness references teach all of the requisite claim limitations of claims 1, 32 and 33.

The Language of Independent Claim 1

Independent claim 1 includes computing means capable of generating display specifications for producing an image of the tree structured information. Independent claim 1 specifically describes the image of the tree structured information as comprising

- a two-dimensional row and column arrangement of cells having a display area,
- each node (of the tree-structured information) is associated with a cell (in the two-dimensional row and column arrangement of cells).
- the arrangement of cells has a number of rows equal to the number of nodes in the longest path and a number of columns equal to the number of leaf nodes.

In addition, independent claim 1 further limits the arrangement of the cells in the image as follows:

i) a root node associated cell is placed in a first row,

ii) node associated cells along a path from the root to a leaf are placed in series in consecutive rows from the first row wherein each node associated cell spans the greater of one column or the number of columns equal to the number of leaf nodes which are located on paths from the node associated with the node associated cell,

iii) each column represents a path from the root to a leaf, and all such paths are represented, and

iv) each node associated cell contains at least one selection element.

<u>The Teachings of the Liechti Reference</u>

Liechti teaches the Structured Graph Format (SGF), an XML-based format used to describe web spaces as structured graphs. (Liechti, Abstract, page ii.) SGF makes use of metadata, defined as machine understandable information about Web resources and other things. (Liechti, Introduction, page 1.) In particular, SGF metadata describes the structure of Web sites in a machine understandable way. (Liechti, Introduction, page 2.) The SGF framework integrates different categories of components, in particular SGF consumers and SGF producers. SGF consumers process the metadata for some purpose. SGViewer is an SGF consumer developed to support user navigation by dynamically generating interactive sitemaps. (Liechti, Introduction, page 2.)

The terminology for describing the tree structure used in the Liechti reference is similar, but not identical, to that used in the subject application. The underlying data model is a structured graph which provides a way of imposing a hierarchy over a network. A structured graph is defined by three sets: i) a set of nodes, ii) a set of hierarchical links between the nodes and iii) a set of associative links between the nodes. Describing the structure of a site in SGF translates into transforming a directed graph into a structured graph. The source graph is defined by a set of nodes (the documents in the site) and a set of links (the hyperlinks between these documents). (Liechti, Section 2.1, page 4.) The home page is generally the root of a tree, and each page contains a number of links allowing visitors to move down the hierarchy. (Liechti, Section 2.1, page 5.) One of the benefits of SGF is that it supports the definition of regions within a Web site via selection operations. Liechti uses the terms "descendants" and "ancestors" to refer to web pages (documents) below and above a node in the hierarchy, and the term "level" to refer to the number of descendants or ancestors. For a given node it is possible for example to select all its descendants, only the first two levels of its descendants (children and grand-children), or any arbitrary number of levels of its descendants. . (Liechti, Section 2.1, page 7.) Liechti does not use the term "leaf node" to indicate a node in the tree structure hierarchy with no outgoing edges (i.e., the end of a path), but it can be seen from the description, and from Figure 3 of a simple SGF example at page 6 that leaf nodes are part of the SGF structured graph.

Section 2.2 (Processing the metadata with SGF consumers) of the Liechti reference at pages 7 – 12 describes creating visual representations of web site structure to support user navigation using the SGViewer. SGViewer visually represents the hierarchical and associative relationships specified in SGF metadata in two distinct panes. The first pane shows the site hierarchy, while the second one shows a local network of associative links. Multiple synchronized windows can also be opened at the same time and thus give different perspectives of the structure to the user. Snapshots of SGViewer are given in Figures 4 to 7 in the reference. (Liechti, Section 2.2, pages 9-10.)

With reference to Figure 5 at page 11, Liechti appears to show the SGF tree structure representation of a web site in a two-dimensional row and column arrangement of cells, with a node in the SGF being associated with a cell. The upper portion of the display area, labeled "Site Hierarchy" at the right side, is the portion of the display that is relevant to the subject invention. The web site being illustrated appears to be the SGF web site because Figure 5 shows a cell labeled "SGF Home Page" that spans the entire width of the upper portion of the display. Assuming for the sake of argument herein that the entire web site structure is displayed in Figure 5 (because Liechti does not appear to disclose any information about the structure of this web site used in the figures), the nodes representing the level 1 children (direct descendants) of the SGF Home page are arranged in cells in the row below the SGF Home Page cell in six (6) columns of equally sized cells. The child-level node labeled "Documentation" in the fourth cell from the left shows two grand-children nodes (in what could be called "level 2"), which appear to be leaf nodes because no other nodes are shown below them. The child-level node labeled "SGF Tools" in the fifth cell from the left shows three grand-children nodes in level 2, and also shows descendant nodes in levels 3 and 4, with some indeterminate number of leaf nodes shown in level 4 (indeterminate because the leaf nodes appear to be represented as dotted lines that are not clear enough to count.) Figure 4 illustrates a "zoom" function that appears to show, in the center display of Figure 4, that there are three level 4 leaf nodes below the left most node under the grand-child node labeled "SGF Viewer."

What the Liechti Reference Does Not Teach

Figures 4 and 5 show that Liechti appears to teach that a root node associated cell (i.e., the "SGF Home Page" cell) is placed in a first row, and that node associated cells along a path from the root to a leaf are placed in series in consecutive rows from the first row. However, from viewing any of the Figures 4, 5, 6 or 7, Liechti clearly does not teach that each node associated cell spans the greater of one column or the number of columns equal to the number of leaf nodes which are located on paths from the node associated with the node associated cell, as is required by independent claim 1. A cell representing a node that has leaf nodes located on paths from that node must span a column width equal to the number of leaf nodes. As shown in the center display of Figure 4, the node represented by the cell labeled "SGF Tools" appears to have a total of seven (7) leaf nodes located on paths from the "SGF Tools" node, and so, as required by independent claim 1, would have to span seven columns in the display of Figure 5 to teach the subject invention.

Compare Figure 5 in Liechti with Figure 1 in the subject application. In Figure 1, cell 2065 represents a node in the tree structure that has a total of four (4) leaf nodes 2170, 2175, 2125 and 2130. Cell 2065 spans four (4) columns in treetable 2055. It is respectfully suggested that, absent some explicit teaching to the contrary, cell 2065 in the Liechti display of Figure 5 would span a single column, equal to the size of the other cells on the same level. The only written description in Liechti of how the cells that represent nodes in the Web site hierarchy are arranged in the sitemap display produced by the SGViewer is found on page 10 and says "[t]he upper frame in the window represents the hierarchical organization of the site, where each rectangle represents a document. The root of the site is drawn at the top of the frame. When a hierarchical link exists between a document A and a document B, then document B is drawn below document A." The remainder of the description at page 10 discusses the display of the associative links and the functions of the tool bar.

Independent claim 1 also requires that all paths from the root to a leaf are represented in the display. It is respectfully suggested that the Liechti disclosure has no

explicit teaching as to whether all paths from the root to a leaf are represented. The window of Figure 5 is divided into the site hierarchy portion and the local network portion, which may very well limit how much information is displayed in the site hierarchy portion. It is distinctly possible that the divided display shown in Liechti may not be capable of showing all paths from the root to a leaf for more complex web sites.

The Teachings of the Lyness Reference

Lyness teaches an invention related to a user interface for navigating a set of information arranged hierarchically. (Lyness, col. 1, lines 6 – 8.) Lyness uses the same basic terminology as that used in the subject application with respect to "tree", "node", "root node", "parent node", "child node" and "leaf node". See Lyness, col. 1, lines 9 – 11 and col. 5, lines 39 – 52 and Figure 1. Lyness teaches that implementations of the invention present in a limited display area a view of the hierarchy that can be changed under user control. At any one time the view is "focused" or centered either at one node or between nodes, and contains all nodes surrounding this center of view or "Focus." By continued navigation and exploiting the fact that any node in the hierarchy can be reached from any other node by a series of steps through intermediate nodes, the user may view any point in the entire hierarchy. (Lyness, col. 5, lines 53 – 64.) Figures 2 and 3 show the limited display area. Figure 6 and its accompany discussion disclose how the display area may be configured into three adjacent levels called the "hiLevel", the "loLevel" and the "beloLevel," where the parent of a loLevel node is in hiLevel and its children if any are in beloLevel. (Lyness, col. 8, lines 49 – 54.) These levels appear to be referred to as "allocated bands" and Lyness teaches that the thickness of the allocated bands decreases geometrically with increasing level. (Lyness, col. 8, lines 56 – 58.)

Lyness discloses how the width of the cells is calculated (what is called "horizontal allocation") in the discussion of Figure 8. The display having been vertically allocated into bands for the hierarchical levels, each band must be further allocated to specific nodes. (Lyness, col. 9, lines 66 – 67 to col. 10, lines 1 - 3, and Fig. 8.) The display area width required for a node depends on the width required to render it and the sum of rendering widths of its children. (Lyness, col. 10, lines 27 - 29.) Lyness teaches that child node width allocations are prorated based on the width of its loLevel parent

node, and parent node (in hiLevel) width allocations are summed from their children's widths, referring to Figure 8 for an example. (Lyness, col. 10, lines 35 - 49.) Figure 16 shows a series of views of a user navigating a hierarchy that illustrate a loLevel cell labeled "Build Your Visual Studio Library" in view 997 having a width accommodating seven (7) child cells. However, in this series of views there is no indication as to how many total leaf nodes are included in the node represented by the cell labeled "Build Your Visual Studio Library."

What the Lyness Reference Does Not Teach

Figures 2, 3 and 6 show that Lyness teaches a very limited display (3 levels, for example) of information organized in a hierarchical tree structure. Thus at any one display time, Lyness does not teach that all paths from the root to a leaf are represented in the display, as required by independent claim 1.

In the limited display area, Lyness appears to teach that a root node associated cell may be placed in a first row when the user is navigating the tree structure from the root, and that node associated cells along a path from the root to a leaf are placed in series in consecutive rows from the first row, but only for a limited number of rows. Moreover, from the discussion of the "horizontal allocation" of each level, and from viewing Figures 8 and 16, Lyness clearly does not teach that each node associated cell spans the greater of one column or the number of columns equal to the number of leaf nodes which are located on paths from the node associated with the node associated cell, as is required by independent claim 1. As noted above, a cell representing a node that has leaf nodes located on paths from that node must span a column width equal to the number of leaf nodes. In Lyness, the example tree structure of Figure 1 has a total of 8 leaf nodes. If Figure 2 were to partially represent the tree structure of Figure 1 according to the present invention, then the three nodes shown in "loLevel" or Level 2 of the display would have to span 8 columns, with "Node" spanning three columns, "node 24 spanning three columns, and "Node 28 spanning 2 columns. As shown in Figure 2, this is clearly not the case.

Neither the Liechti nor Lyness reference teaches every claim limitation of independent claim 1. It follows then, even if there were a reasonable basis to make the asserted combination of teachings, the combination would not teach the invention claimed in independent claim 1.

For the foregoing reasons, is believed that independent claim 1 is patentably distinct over and is not obvious in view of the Liechti and Lyness disclosures, and is believed to be in condition for allowance. Insofar as claims 2 – 31are concerned, these claims include the limitations of and depend from now presumably allowable claim 1 and so are also believed to be in condition for allowance.

The Language of Independent Claim 32

The Office Action states, at page 8, that claims 32 and 33 reflect methods comprising similar instructions used for performing the display methods as claimed in numbers 1 – 7 and are rejected along the same rationale. It is assumed that the Office Action inadvertently refers to these computing system claims as method claims, and that the claim range is intended to be stated as claims 1 – 31. Applicants note that the language used in these claims is different from that used in independent claim 1, and so will discuss the limitations in these claims separately from the discussion of claim 1.

Independent claim 32 includes computing means capable of generating display specifications for producing an image of the tree structured information. Independent claim 32 specifically describes the image of the tree structured information as comprising

- a two-dimensional structure for containing cells associated with each node,
- the number of the plurality of rows equals the number of the nodes in the longest path, and
- the number of the plurality of columns equals the total number of the leaf nodes.

In addition, independent claim 32 further limits the arrangement of the cells in the image as follows (using the terminology of a cell associated with a parent node being a parent cell, a cell associated with a child node being a child cell, and a cell associated with a leaf node being a leaf cell):

a) each of the cells is placed in a row n within the two-dimensional structure such that the parent cells of each cell are placed in a row n-1,
b) child cells of each cell are placed in a row n+1,
c) leaf cells span exactly one column,
d) cells other than leaf cells span exactly the columns spanned by the child cells associated with that cell, and
e) each cell contains a selection element.

The teachings of the Liechti and Lyness references are discussed above. Neither reference teaches that the number of the plurality of columns in the display equals the total number of the leaf nodes in the tree structure, as required by independent claim 32. Nor does either reference require that leaf cells span exactly one column, also as required by independent claim 32. In addition, it appears from the displays in Figures 4 to 7 in Liechti that Liechti also does not teach that cells other than leaf cells span exactly the columns spanned by the child cells associated with that cell. In Figure 5, for example, there are seven (7) cells (not leaf cells) in the level 2 "child" level of cells below the root cell representing the SGF Home Page. It is clear that these cells do not span exactly the columns spanned by the child cells associated with that cell, since the cell labeled "What is SGF?" has one child cell while the cell labeled "Documentation" has two child cells. The cell labeled "Documentation" would need to be twice as wide as the cell labeled "What is SGF?" in order to satisfy this limitation of independent claim 32.

The Liechti and Lyness references do not teach every claim limitation of independent claim 32. It follows then, even if there were a reasonable basis to make the asserted combination of teachings, the combination would not teach the invention claimed in independent claim 32. For the foregoing reasons, is believed that independent claim 32 is patentably distinct over and is not obvious in view of the Liechti and Lyness disclosures, and is believed to be in condition for allowance.

The Language of Independent Claim 33

Independent claim 33 includes computing means capable of generating display specifications for producing an image of the tree structured information. Independent claim 32 specifically describes the image of the tree structured information as comprising

- a two-dimensional structure for containing cells associated with each node,
- the number of the plurality of rows equals the number of the nodes in the longest path, and
- the number of the plurality of columns equals the total number of the leaf nodes.

In addition, independent claim 33 further limits the arrangement of the cells in the image as follows (using the terminology of a cell associated with a parent node being a parent cell, a cell associated with a child node being a child cell, and a cell associated with a leaf node being a leaf cell):

a) each node has a span value where the span value is the number of leaf nodes that are on paths that include the node,
b) the root cell is located in the first row and spans all of the columns of the first row of the display image,
c) child cells are located in consecutive rows of the display image for each child node of each parent node in the previous row where each child node spans the number of columns equal to its span value and is placed to span at least a portion of the same columns spanned by its parent cell,
d) cells other than leaf cells span exactly the columns spanned by the child cells associated with that cell,
e) leaf cells span one column, and
f) each cell contains at least one selection element , and

The teachings of the Liechti and Lyness references are discussed above. Neither reference requires that leaf cells span one column, as required by independent claim 33. Nor does either reference require that child cells be located in consecutive rows of the display image for each child node of each parent node in the previous row where each child node spans the number of columns equal to its span value, as also required by independent claim 33. The span value is defined in the claim as being the number of leaf

nodes that are on paths that include the node. Thus the width of the cell representing the child node must be the number of columns equal to its span value, or the number of columns equal to the number of leaf nodes that are on paths that include that child node. As noted above in the discussion of the "horizontal allocation" of the nodes in the Lyness reference, the number of leaf nodes for any given child cell is not described to be a factor when computing the width of the parent or child cells.

In addition, it appears from the displays in Figures 4 to 7 in Liechti that Liechti also does not teach the limitation that each child node span the number of columns equal to its span value. Assuming that the hierarchy displayed in Figure 5 represents the entire tree structure, and the zoom display of Figure 4 shows the additional leaf nodes, the tree structure of Figure 5 appears to have a total of 14 leaf nodes, with the child cell labeled "SGF Tools" having seven (7) leaf nodes. The span value of the child cell labeled "SGF Tools" is therefore seven and that cell should span seven columns in the display, if the display in the Liechti reference were to be configured according to independent claim 33. It is clear that the child cell labeled "SGF Tools" is the same size as the other child cells on that level and so it does not satisfy the limitations of independent claim 33.

The Liechti and Lyness references do not teach every claim limitation of independent claim 33. It follows then, even if there were a reasonable basis to make the asserted combination of teachings, the combination would not teach the invention claimed in independent claim 33. For the foregoing reasons, is believed that independent claim 33 is patentably distinct over and is not obvious in view of the Liechti and Lyness disclosures, and is believed to be in condition for allowance.

Dependent Claims 21 - 30.

The Office Action rejects dependent claims 21 – 30 as being taught in Liechti at selected pages. These dependent claims recite various features related to the display of a reading view of the information associated with the nodes associated with the cells in the reading selection made by a user. The Office Action recites the display of the cell titles in Figure 5 (e.g., SGF Home, What's New, Publication, etc.), for example, as teaching

the reading view of the information associated with the nodes associated with the cells. Dependent claims 28 – 30 recite alternative locations for the display of the reading view, either in the same display area previously occupied by the image of the tree-structured information, in a different display area, or sharing the display area with the tree-structured information. Clearly from the language in these claims it can be seen that the reading view of the information is a display specification is distinct from the display specification of the image of the tree-structured information; these are two different displays, with the reading view being of the information associated with the nodes associated with the cells.

In Liechti, the cell titles are present in the image of the tree-structured information (i.e., the sitemap of the Web site). It is respectfully submitted that the display of an enlarged or zoomed view of some portion of the sitemap, simply repeating the cell titles, or providing cell titles where none were visible before because of lack of space does not teach the display of a reading view of the information associated with the nodes associated with the cells in the reading selection made by a user. None of the different views of the site hierarchy display in Figures 4, 5, 6 or 7 shows any information associated with the nodes associated with the cells in the site hierarchy display beyond the titles of the cells. At most, when a portion of the site hierarchy is expanded, as in Figure 6, more cell titles come into view because there is more space to view them, but it is respectfully submitted that these cell titles do not teach the a reading view of the information associated with the nodes associated with the cells in the reading selection made by a user as required by claims 21 – 30.

For the foregoing reasons, is believed that dependent claims 21 – 30 are patentably distinct over and are not obvious in view of the Liechti disclosure, and are also believed to be in condition for allowance.

Reconsideration Requested

The undersigned respectfully submits that, in view of the foregoing remarks, the rejections of the claims raised in the Office Action dated November 29, 2004 have been

fully addressed and overcome, and the present application is believed to be in condition for allowance. It is respectfully requested that this application be reconsidered, that these claims be allowed, and that this case be passed to issue.

Fee Authorization And Extension Of Time Statement

No additional fee is believed to be required for this amendment, however, the undersigned Xerox Corporation attorney (or agent) hereby authorizes the charging of any necessary fees, other than the issue fee, to Xerox Corporation Deposit Account No. 24-0025.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he is hereby authorized to call Applicant's attorney, Nola Mae McBain, at Telephone Number (650) 812-4264, Palo Alto, California.

Respectfully submitted,

Nola Mae McBain

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Attachment: Replacement Sheets for Figures 2, 13, 14 and 19.

Amendments to the Drawings:

The attached drawing sheets include changes to Figures 2, 13, 14 and 19. The reference numeral 2070 is added to Figure 2 to conform the drawing to the specification at page 18, line 5. Also in Figure 2, reference numeral 2016 is corrected to 2076 to conform the drawing to the specification at page 18, line 27.

The reference numeral 3240 is added to Figure 13 to conform the drawing to the specification at page 26, line 8.

The reference numeral 3270 in Figure 14 is corrected to 3370 to conform the drawing to the specification at page 28, line 21.

In Figure 19, the box labeled "N31" in graph 350 is corrected to read "N131" to conform the drawing to the specification at page 33, line 20.

Attachment: Replacement Sheets, Figures 2, 13, 14 and 19